Séminaire

Institut de Biologie Structurale

CONFÉRENCIER INVITÉ

Vendredi 1er Octobre 2021 à 11h

Salle des séminaires IBS & visioconférence

Institut de biologie structurale - 71 avenue des Martyrs CS 10090 38044 Grenoble Cedex 9 - T.+33 (0)4 57 42 85 00

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par **Prof. Michael J. Maroney**

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Maturation of Ni superoxide dismutase: how does the enzyme get its nickel?

In this work, we investigate the maturation of Nickel-dependent Superoxide Dismutase (NiSOD) from *Streptomyces coelicolor*, for which no chaperone has been established, and provide evidence for the role of low molecular weight complexes with L-histidine in the process. NiSOD is the most recently discovered member of superoxide dismutase family of enzymes, which catalyze conversion of superoxide to oxygen and hydrogen peroxide. The assembly and maturation of NiSOD is dependent on the post-translational processing of the N-terminal leader sequence of its precursor, SodN, by the cognate protease, SodX. Using purified proteins overexpressed in *Escherichia coli*, we have characterized *S. coelicolor* SodN and SodX, including their Ni-binding properties. We then show using mass spectrometry, that SodX is capable of processing SodN *in vitro* in the absence of metal ions and apo-NiSOD can subsequently be nickelated to give active NiSOD. Further, metal ions, including Ni(II), inhibit proteolytic cleavage by SodX. When the proteolytic processing is carried out in the presence of Ni(II) and physiologically relevant L-histidine concentrations, processing and nickel incorporation are rescued. Kinetic studies using pulse-radiolytic generation of superoxide demonstrate the catalytic activity of the NiSOD prepared from SodN. Interestingly, D-histidine, under the same conditions does not rescue SodN processing in the presence of Ni(II), suggesting that a specific ternary complex with L-His is involved.

Hôte : Juan Fontecilla-Camps (IBS/groupe Métalloprotéines)

L'audience en présentiel étant actuellement limitée à 29 personnes, merci de penser à vous inscrire sur https://framadate.org/cf2ruvFUO6KAePwd et à demander un avis de rdv au moins 48h à l'avance auprès de ibs.seminaires@ibs.fr

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